
EE 491 Bi-Weekly Report 6

11/6/18 – 11/19/18

Group 11

High-Level Design of a Distribution Microgrid

Client: Alliant Energy

Advisor: James McCalley

Nick Stitzell – Communications Engineer

Minoru Fernando – Research Engineer

Joe Thurin – Power Engineer

Taylor Murphy – Power Engineer

Remo Panella – Data Engineer

Project Objective:

Create an excel document that estimates the cost of incorporating distributive generation and storage into a microgrid system at Nichols, IA.

Summary:

This week we wrapped up our prototype design. It still has minor details to be improved before it is delivered to Alliant, but we are now able to divert our focus to the poster and report. We began mocking up our poster and made significant advancements. We will likely complete this within the first week back from break.

Past Weeks Accomplishments:

Last week we continued working on the VBA design and met with Alliant to discuss how we will package our design together and walked them through our almost complete design.

Pending Issues:

We have no pending issues.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Poster Design	5	79
Minoru Fernando	Poster design, Microgrid maintenance and design costs	2	65
Joe Thurin	Simulation output design in VBA	5	84
Taylor Murphy	Simulation output design in VBA and financial estimates	4	70
Remo Panella		0	61

Plans for the Coming Weeks (11/20/18 – 12/3/18):

- Work on being able to select the best design and display that on the main user page
- Have the design 100% complete and ready to present to Alliant
- Complete poster and turn in on Canvas
- Complete report and turn in on Canvas
- Give a presentation to Alliant Energy prior to the panel presentation

Summary of Client Meeting (11/8/18):

- Poster Discussion
 - What identification would Alliant like on the poster?
 - Logo? Names of Darin and Logan?
- Demonstrated the newest version of the prototype which has been linked with VBA
- Running 10,000 combinations of panels, batteries, and supplemental generation
 - Logan pointed out that supplemental generation shouldn't be an input, it should be an output that makes up any unsupplied load.
- Should we be using a Net Present Value with our 30 year cost projection?
 - Logan says that a 30 year cost over time is fine
- Design: Panels, Batteries, Backup Generation
- Outputs: Cost, Energy Not Served
- Plot cost as a function of excess demand
 - The higher the cost the lower the excess demand
 - Design parameters matter less than the output parameters
 - We should try to plot cost vs 100% demand met to find a correlation in the design combinations
 - This means 0 backup generation

- How will we determine which design to choose?
 - Logan will talk with others at Alliant about this
- Our current way of rejecting poor designs is by rejecting all designs that have at least one hour in an entire year that doesn't supply the demand within 5%
 - This may be too restrictive, and we will look into other methods
- Be able to articulate in our final design any costs that are not being factored into our design